

Fort Drum Spatial Engineering System

William A Martin, PE - Systems / GIS
Administrator



Briefing Overview

- Business Plan For Spatial Engineering
- Fielding Object Technology in Spatial Engineering
- Making the Products Available to Everyone

Home of the 10th Mountain Division (L.I.)

- Located 30 miles from Canada
- Home of the 10th Mountain Division (L.I.)
- Largest training area in the Northeast
- 10,000 foot runway can land any plane
- Training areas support heavy artillery, armored cavalry, aerial gunnery, and urban warfare

10th Mount Division (LI)

- Rapid Deployment
anywhere in the world
ready to fight and win on
arrival



Evolution of a Spatial Data System

- A solid information system follows a logical business model
- The business plan would address the system as a whole and not at the end user level
- A product oriented approach based on standards was adopted

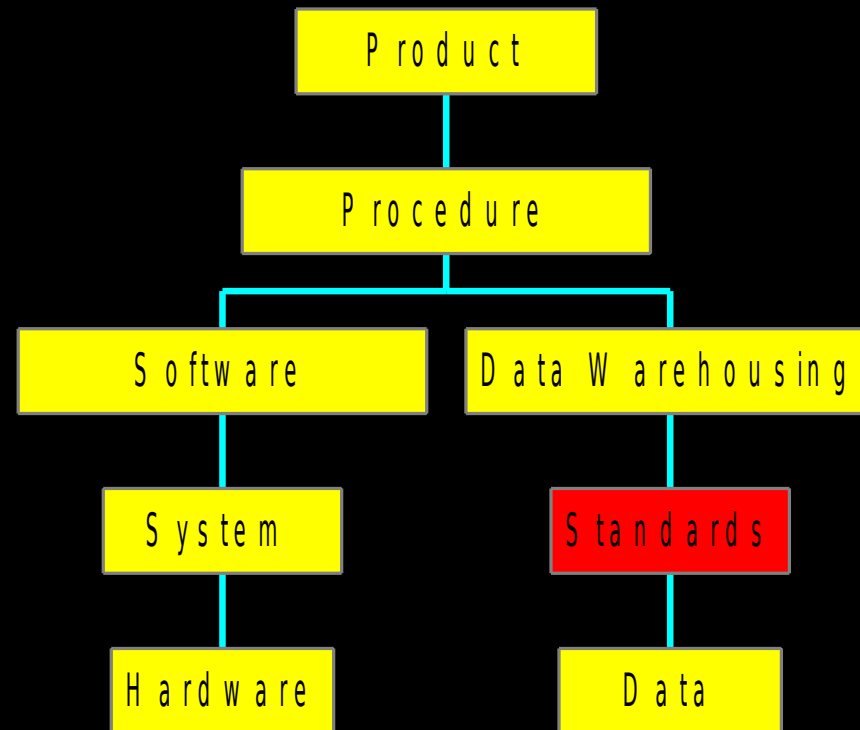
The Business Plan

- Define the products to be produced
 - Short term
 - Long term
- Give each product a name
- Break each product into components
 - What processes and data are needed to produce the goal
 - What requirements do the processes place on the system
 - Give each component a name

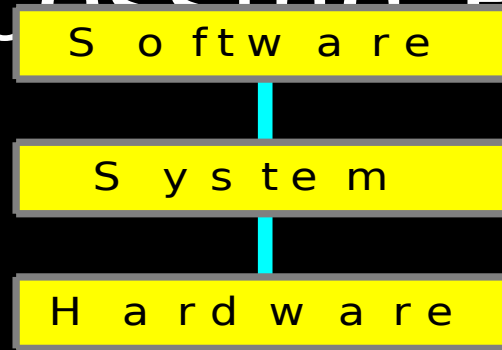
The Business Plan (cont)

- Given the requirements the products place on the system
 - Define what software is required
 - What procedures need to exist to produce the result
 - What equipment is required

The Information Processing Plant



The Information Processing Plant



- System management is vital
 - No system = no product
- Failing computers and networks levy a heavy tax
 - They frustrate users and lower morale
 - Add a tremendous cost in time and lost effort
- Software is the interface between the application and the system
- If any of these fail → No Product

The Other Half of the Model

- With a plant in place, it is time to define the products and their components
- The components will rely on procedures which use certain software to process data
- The data will be stored using a warehouse model – the TSSDS
- Enumeration of product names gives rise to a data processing model

Object Oriented Implementation

- Objects are things -- nouns
- An object is composed of an association of properties and methods
- Properties are adjectives which describe the object
- Methods provide a way of communicating with the object and giving it commands

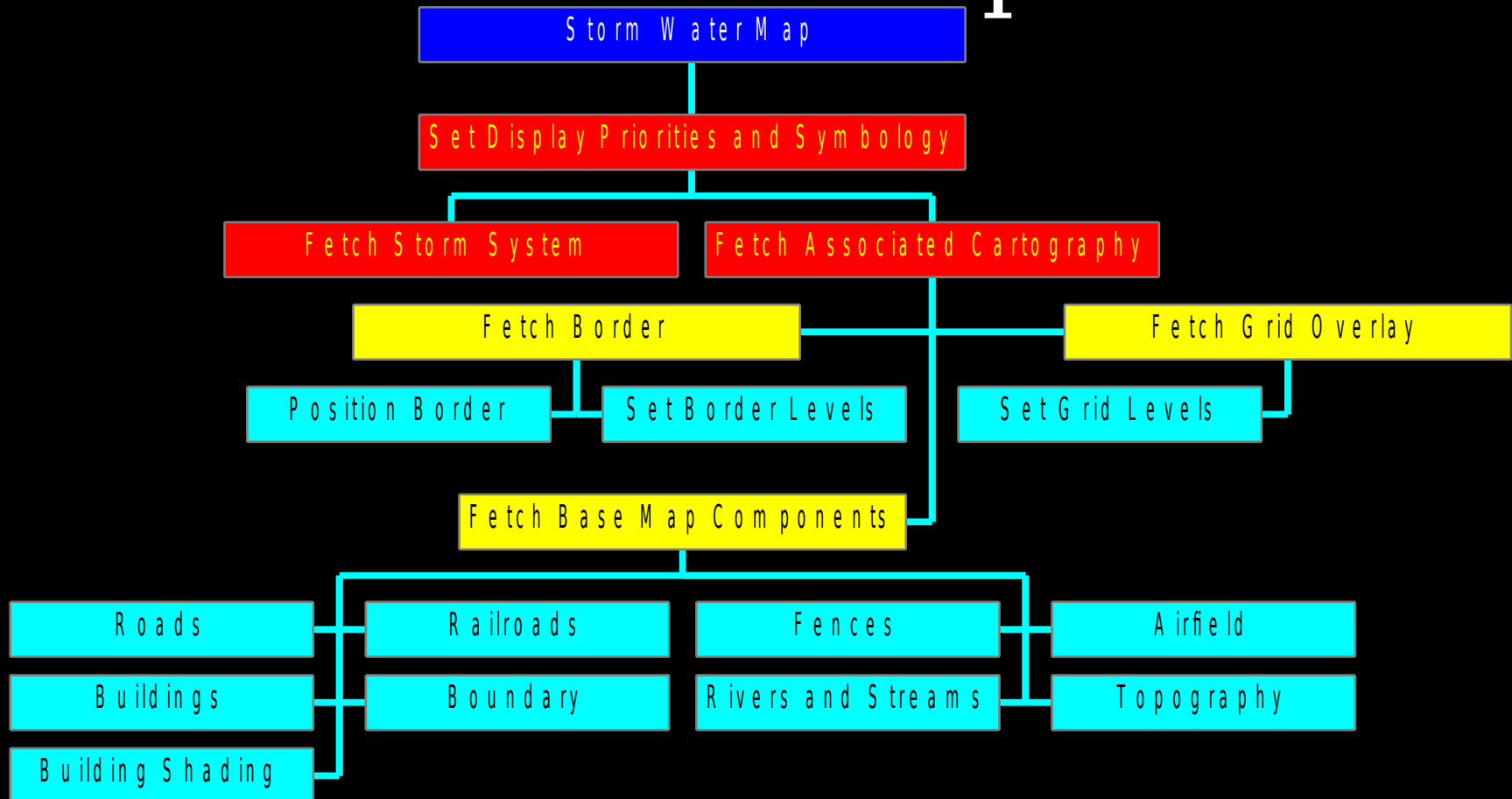
Objects Deployed

- The TSSDS defines the properties of a multitude of low level objects (features)
- The TSSDS further groups collections of objects into higher level objects (categories)
- Categories have a display reliance on other categories
- Most especially the TSSDS provides a vocabulary and prescription for storage

Basic Map Components

- Maps are composed of a group of associated objects
 - Standard Background
 - Border and title
 - Grid overlay
 - One or more themes of interest

Assembly of a Storm Water Map

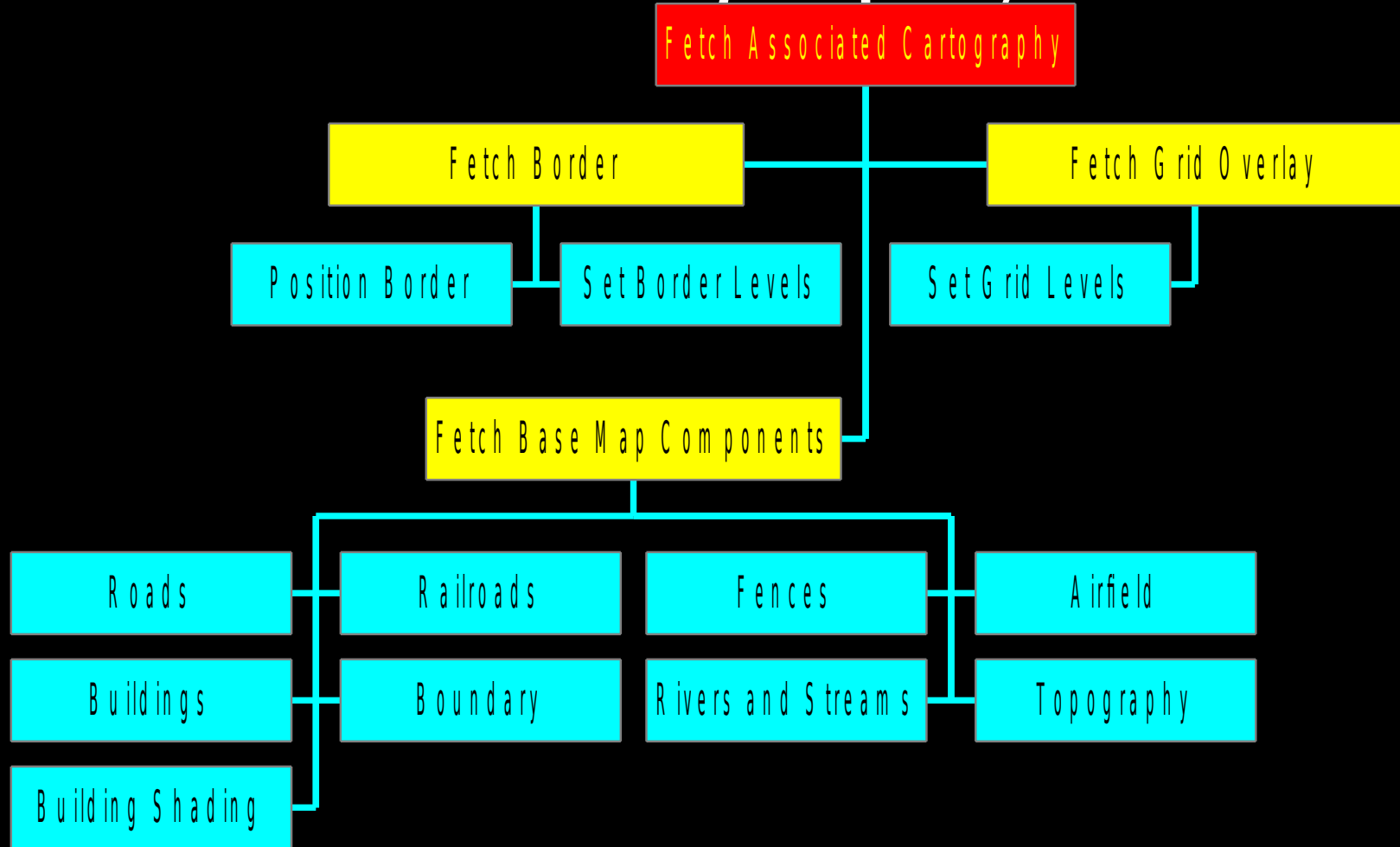


The Steps



1. Fetch the storm water system
2. Fetch the associated cartography
3. Set the display priorities and symbology
4. Plot the map

Fetching Associated Cartography



The Steps

1. Fetch the border
2. Fetch the grid overlay
3. Fetch the base map components
 - Each of these processes call lower level processes
 - Fetch the buildings
 - Fetch the roads

Object Identification

- Each object in the hierarchy is assigned a name and cataloged
- The object library is maintained at a single location
- New objects are added as needs dictate
- No objects are discarded – if you are asked for something once you'll see it again

Interchangeability of Objects

- Objects can be interchangeable
- Objects used to assemble the storm water map may be reused with other utilities
- Interchangeability leads to easy assembly

Objects can be Stored

- Once a particular theme is generated, it can be stored for later regeneration
- The latest data will always be displayed in a standard manner
- Bulk generation of plots or recall of special maps becomes easy
- Provides for easy update of web maps and the like

The User Benefit

- The user is relieved of the tedium of data assembly
- QC is at the lowest level – data verification
- Customers can communicate needs to the user – ‘I need ten copies of sheet 5 of the water system at half scale’
- There is a guarantee that no map component is omitted

Institutionalization of Objects

- Web enabled technology makes fielding objects easier
- Objects with a likelihood of retained value are placed on the web
- Web interface provides a living master plan
- Shops and other customers use the web interface daily

Reliance on the TSSDS Standard

- Establishes a vocabulary
- Establishes the data warehouse organization
- Supports the requirements for systematic data retrieval
- Supports the requirements for customized data output
- Establishes capability for data inventory

That's My Story
and
I'm sticking to it

The TSSDS
Don't leave home without
it